

of Fordham University takes over the editorship. We wish for him the same loyal support the previous editor has enjoyed.

BOOK REVIEWS

Plant Physiology *

RALPH C. BENEDICT

The Meyer and Anderson text, *Plant Physiology*, is an interesting and valuable addition to the list of recent new texts and new editions in its field. Designed as a text for college use, its authors postulate as necessary prerequisites a year each of general botany and general chemistry. As with other recent plant physiologies, its development proceeds almost entirely from the physical sciences. For example, its first five chapters deal successively with such topics as "solutions," "interfacial phenomena," "colloidal systems," "sols and gels." After a sixth chapter on "The plant cell," four more chapters follow on "diffusion," "osmosis," "imbibition," and "permeability." The remaining 27 chapters have botanical titles, but all include considerable appropriate discussion of relevant physico-chemical principles and facts.

That a text developed along these lines to a higher degree than others will be welcome and valuable there seems no basis for doubt. Whether it will find favor for class use will perhaps depend upon the training and predilections of specific course heads and the preparation of available students. In any event, its value for reference use seems indubitable.

In keeping with the emphasis on the physico-chemical aspects of plant physiology, the authors have introduced less than the usual amount of structural data and illustration. The reviewer's personal preference would be for a somewhat greater emphasis on the anatomical bases of plant functions. Along the same line is a preference for less formalized representations than that of a segment of young corn stem (fig. 53). Of three bundles shown, none shows clearly the predominant pattern of three vessels char-

* Meyer, B. S., and Anderson, D. B. *Plant physiology*. Pp. 696. Van Nostrand Co. 1939.

acteristic of most such bundles, and there is no indication of the well-marked, clearcut pattern of sieve cells and companion cells found in every *Zea cauline* bundle.

In line with the expressed purpose outlined in the preface, the text presents in more positive form than some other texts the author's preferences among various more or less debatable concepts. For example, in explaining the rise of liquids in stems, after preliminary discussions during which certain vital factors and root pressure are admitted as possible minor factors, the authors set up "the cohesion of water theory" as an almost completely satisfactory explanation and state that "At the present time most plant physiologists are agreed that the cohesion of water theory is a correct representation of the principle mechanism by which water is transported through plants, be they the tallest of trees or herbs only a few feet in height." To a reviewer who is not a plant physiologist, it is difficult to see how the tensile strength of any elongate column, water or wire, can be counted as anything but secondary to the force or forces which exert the necessary pull at the top of the column. Imbibition seems not even to be accorded mention among possible factors.

While the selection of specific theories for substantial support and preference is justifiable and desirable, it is likely to raise question of dispute on the part of other botanists, who may have their own pet theories or who may feel that for some given phenomenon, no positive stand is justified. For the reviewer, such a case is illustrated by the following statement: "No reputable botanist has held for generations, for example, that plants obtain their food from the soil, yet this and other fallacious beliefs are still widely entertained among the general population." The question at issue is, of course, primarily one of semantics and pedagogy, but the reviewer, whatever his category, admits to a pet aversion against this particular limitation of the meaning of the word, food. Moreover, he would even hold that botanically and chemically the definition of the word, food, must be expanded to include water and minerals, not to mention thiamin, root-absorbed glucose, etc.

Another point in which semantics is perhaps more involved than fact is found in the discussion of guttation. "The drops of guttation water which form at the tips of grass blades and the tips and edges of the leaves of other plants are often erroneously con-

sidered to be dew" (p. 170). It would seem that the word, dew, might better be left in its general connotation to cover all examples of wet lawns, etc., occurring without visible precipitation. The review would extend his cervical region to the extent of expressing the opinion that most cases of wet feet incurred on summer mornings are the result of "botanical dew," not of "physical dew." It is realized that this opinion does not seem to be widely held, but that, it is suggested, is merely because botanists have accepted the physicists' word for it.

In these references to minutiae, there is no wish to withhold from the Meyer and Anderson a due meed of praise as a scholarly, comprehensive, and valuable text which seems certain of wide use and approval.

Rocky Mountain Trees *

ARTHUR HARMOUNT GRAVES

Reliable floras of any given region are always welcomed by the herbarium student, the trained taxonomist, or by the traveller who is botanically minded. In my own travels in this country and in Europe, I have often wished for books of this sort to which I could turn in time of need.

Although authoritative floras of the Rocky Mountain region are available, up to the time of the publication of "Rocky Mountain Trees" there has been none devoted exclusively to the trees of the region; in particular none which treats of them with regard to their silvical and ecological, as well as their purely botanical, or, rather, their morphological characters.

As the author states, "public interest in trees and forests has increased greatly in recent years." It appears that this interest is being steadily maintained, with a regularly mounting curve, and that, therefore, with the passing years, there will be an even greater demand for books of this kind.

* Rocky Mountain Trees, A Handbook of the Native Species, with Plates and Distribution Maps. Richard J. Preston, Jr. Iowa State College Press. 1940. \$2.00.